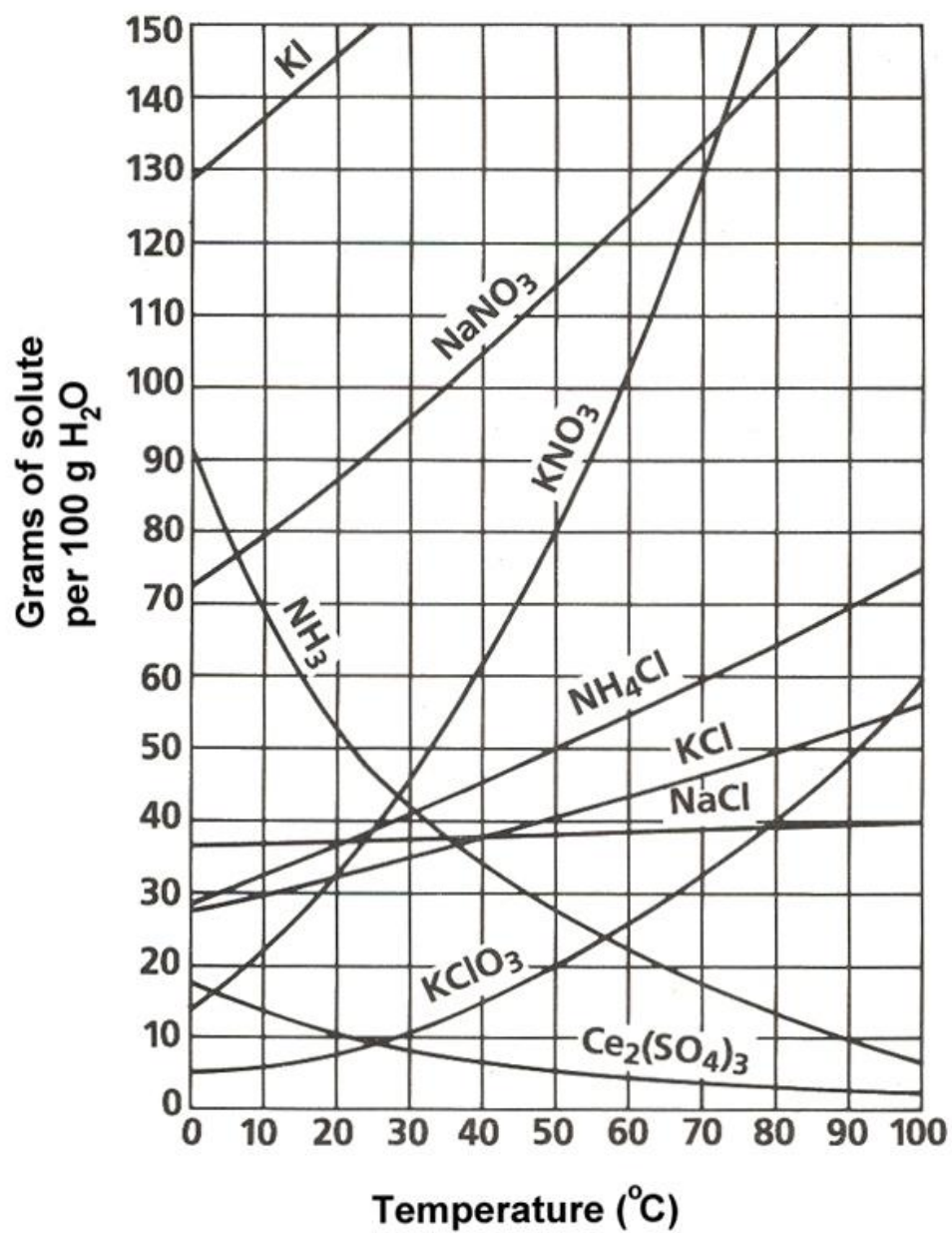


# SOLUBILITY CURVE WORKSHEET

Use your solubility curve graph provided to answer the following questions.

1. What are the customary units of solubility on solubility curves? \_\_\_\_\_
2. Define solubility. \_\_\_\_\_
3. According to the graph, the solubility of any substance changes as \_\_\_\_\_ changes.
4. List the substances whose solubility decreases as temperature increases. \_\_\_\_\_  
\_\_\_\_\_
5. Which substance is least affected by temperature changes? \_\_\_\_\_
6. How many grams of ammonium chloride ( $\text{NH}_4\text{Cl}$ ) at  $50^\circ\text{C}$ ? \_\_\_\_\_
7. \_\_\_\_\_ and \_\_\_\_\_ have the same solubility at approximately  $78^\circ\text{C}$ .
8. Which compound is least soluble in water at  $10^\circ\text{C}$ ? \_\_\_\_\_
9. How many grams of  $\text{KNO}_3$  can be dissolved at  $50^\circ\text{C}$ ? \_\_\_\_\_
10. Are the following solutions unsaturated, saturated, or supersaturated?
  - a. 45g of  $\text{NaNO}_3$  in 100 g of water at  $30^\circ\text{C}$ . \_\_\_\_\_
  - b. 60g of  $\text{KClO}_3$  in 100 g of water at  $60^\circ\text{C}$ . \_\_\_\_\_
11. How many grams of sodium chloride,  $\text{NaCl}$  are required to saturate 100 grams of water at  $100^\circ\text{C}$ ? \_\_\_\_\_
12. How many grams of  $\text{NaNO}_3$  are required to saturate 100 grams of water at  $90^\circ\text{C}$ ? \_\_\_\_\_
13. How many grams of  $\text{KI}$  will saturate water at  $20^\circ\text{C}$ ? \_\_\_\_\_
14. At what temperature would 25g of potassium chlorate ( $\text{KClO}_3$ ) dissolve? \_\_\_\_\_
15. At what temperature would 55g of  $\text{NH}_4\text{Cl}$  dissolve? \_\_\_\_\_
16. 89 g  $\text{NaNO}_3$  is prepared at  $30^\circ\text{C}$ .
  - a) Will all of the salt dissolve? \_\_\_\_\_
  - b) What mass of  $\text{NaNO}_3$  will dissolve at this temperature? \_\_\_\_\_
17. If 25 grams of  $\text{NH}_4\text{Cl}$  is dissolved at  $50^\circ\text{C}$ , how many additional grams  $\text{NH}_4\text{Cl}$  would be needed to make the solution saturated at  $80^\circ\text{C}$ ? \_\_\_\_\_
18. At  $50^\circ\text{C}$ , how many grams of  $\text{KNO}_3$  will dissolve? \_\_\_\_\_
19. At  $70^\circ\text{C}$ , how many grams of cerium (III) sulfate ( $\text{Ce}_2(\text{SO}_4)_3$ ) dissolve? \_\_\_\_\_
20. Determine if each of the following is unsaturated, saturated, or supersaturated.

a. 55g of $\text{NH}_3$ at $20^\circ\text{C}$ . _____	f. 80g of $\text{NaNO}_3$ at $10^\circ\text{C}$ . _____
b. 10g of $\text{Ce}_2(\text{SO}_4)_3$ at $10^\circ\text{C}$ . _____	g. 145g of $\text{NaNO}_3$ at $80^\circ\text{C}$ . _____
c. 125g of $\text{KNO}_3$ at $60^\circ\text{C}$ . _____	h. 35g of $\text{NaCl}$ at $100^\circ\text{C}$ . _____
d. 65g of $\text{NH}_4\text{Cl}$ at $80^\circ\text{C}$ . _____	
e. 12g of $\text{NH}_3$ at $90^\circ\text{C}$ . _____	



# SOLUBILITY CURVE WORKSHEET KEY

Use your solubility curve graphs provided to answer the following questions.

1. What are the customary units of solubility on solubility curves? Degress Celsius and grams of solute/100g of water
2. Define solubility. A measure of how much solute can dissolve in a given amount of solvent.
3. According to the graph, the solubility of any substance changes as temperature changes.
4. List the substances whose solubility decreases as temperature increases.  $\text{NH}_3$  and  $\text{Ce}_2(\text{SO}_4)_3$
5. Which substance is least affected by temperature changes?  $\text{NaCl}$
6. How many grams of ammonium chloride ( $\text{NH}_4\text{Cl}$ ) at  $50^\circ\text{C}$ ? 50g
7.  $\text{NaCl}$  and  $\text{KClO}_3$  have the same solubility at approximately  $78^\circ\text{C}$ .
8. Which compound is least soluble in water at  $10^\circ\text{C}$ ?  $\text{KClO}_3$
9. How many grams of  $\text{KNO}_3$  can be dissolved at  $50^\circ\text{C}$ ? 80g
10. Are the following solutions unsaturated, saturated, or supersaturated?
  - a. 45g of  $\text{NaNO}_3$  in 100 g of water at  $30^\circ\text{C}$ . saturated
  - b. 60g of  $\text{KClO}_3$  in 100 g of water at  $90^\circ\text{C}$ . supersaturated
11. How many grams of sodium chloride,  $\text{NaCl}$  are required to saturate 100 grams of water at  $100^\circ\text{C}$ ? 40g
12. How many grams of  $\text{NaNO}_3$  are required to saturate 100 grams of water at  $75^\circ\text{C}$ ? 140g
13. How many grams of  $\text{KI}$  will saturate water at  $20^\circ\text{C}$ ? 33g
14. At what temperature would 25g of potassium chlorate ( $\text{KClO}_3$ ) dissolve?  $60^\circ\text{C}$
15. At what temperature would 60g of  $\text{NH}_4\text{Cl}$  dissolve?  $70^\circ\text{C}$
16. 89 g  $\text{NaNO}_3$  is prepared at  $30^\circ\text{C}$ .
  - a) Will all of the salt dissolve? No
  - b) What mass of  $\text{NaNO}_3$  will dissolve at this temperature? 95g
17. If 50 grams of  $\text{NH}_4\text{Cl}$  is dissolved at  $50^\circ\text{C}$ , how many additional grams  $\text{NH}_4\text{Cl}$  would be needed to make the solution saturated at  $80^\circ\text{C}$ ? 15g
18. At  $50^\circ\text{C}$ , how many grams of  $\text{KNO}_3$  will dissolve? 80g
19. At  $70^\circ\text{C}$ , how many grams of cerium (III) sulfate ( $\text{Ce}_2(\text{SO}_4)_3$ ) dissolve? 5g
20. Determine if each of the following is unsaturated, saturated, or supersaturated.
  - a. 55g of  $\text{NH}_3$  at  $20^\circ\text{C}$  supersaturated
  - b. 10g of  $\text{Ce}_2(\text{SO}_4)_3$  at  $10^\circ\text{C}$  unsaturated
  - c. 110g of  $\text{KNO}_3$  at  $60^\circ\text{C}$ . supersaturated
  - d. 65g of  $\text{NH}_4\text{Cl}$  at  $80^\circ\text{C}$ . saturated
  - e. 12g of  $\text{NH}_3$  at  $90^\circ\text{C}$ . supersaturated
  - f. 78g of  $\text{NaNO}_3$  at  $10^\circ\text{C}$ . saturated
  - g. 145g of  $\text{NaNO}_3$  at  $80^\circ\text{C}$ . saturated
  - h. 35g of  $\text{NaCl}$  at  $100^\circ\text{C}$ . unsaturated